VEGETATION RESOURCES INVENTORY (VRI) UPDATE 2002

Introduction

The purpose of the "VRI Implementation Update 2002" is to report on the status of the implementation of the *Vegetation Resources Inventory (VRI)* program and its relationship to other ongoing forest inventory initiatives such as *Provincial Change Monitoring Inventory*. This document also provides a summary (appendix A) of key business issues and recommendations of best practices associated with implementing and analysing a VRI. It has been developed in conjunction with the recently completed VRI manuals available at

VRI Standards and Manuals: http://srmwww.gov.bc.ca/tib/vri/vri/vri_standards.htm

It is intended for stakeholders or people interested in the VRI, who wish to know more about how the program is being implemented throughout British Columbia.

Since the VRI program was initiated (circa 1996), several reports have been developed that describe the intended implementation of the VRI (VRI Implementation Plan 1998 – can be found at http://srmwww.gov.bc.ca/tib/vri/reports&pub\vpip\implementation\vri_implementation_1998July3.pdf). This plan, *VRI Implementation Update 2002*, describes the current status of the VRI implementation and provides references where more detailed information can be accessed. This plan also assumes that the reader is somewhat familiar with the VRI program and procedures. For more information on the VRI, please refer to the main site at

VRI main site: http://srmwww.gov.bc.ca/tib/vri/index.htm.

The VRI is a toolbox consisting of procedures and standards for the following: photo interpretation, ground sampling (including net volume adjustment factor and within polygon variation), statistical adjustment and Provincial Change Monitoring Inventory. Depending on the need for information, as defined by the stakeholder, data can be collected using one or more of the VRI processes.

The VRI ground-sampling component can be implemented at several levels depending on the particular business needs. It can be deployed over the entire province, measuring all the timber and non-timber resources. It can also be deployed over a Management Unit (e.g. Tree Farm Licence [TFL] or Timber Supply Area [TSA]) or a small watershed within a TFL or TSA, measuring selected resources in specific portions of the land base.

The VRI photo-interpretation component can also be deployed to meet specific spatial business needs; however, it is most commonly being implemented within complete management units such as Timber Supply Areas (TSAs), Forest Districts, Tree Farm Licenses (TFLs), Innovative Forest Practices Agreements (IFPAs), etc.

History / Background

The original plan for VRI Implementation as envisaged in 1995 was to deploy the VRI over the entire province in a period of seven to ten years. The "Provincial VRI", as it was called, would be implemented by different stakeholder groups within implementation units such as a Forest District, TSA, TFL or a sub-unit (e.g. problem forest type). New photo estimation, if required, and/or ground sampling activities combined with statistical adjustment would make up the vegetation inventory. Inventory information from all the implementation units in a district would then be rolled up for all districts to report a provincial total.

As a result of funding changes, the original plan to implement the District based Provincial VRI has not been realised. Instead of a co-ordinated, systematic approach to completing the Provincial VRI, the program has largely been unfolding on a business needs basis within specific management units or sub-units. The Ministry of Sustainable Resource Management (MSRM), Terrestrial Information Branch (TIB) recognise, however, that this latter approach, although providing information for key local planning business issues, will not provide timely and accurate information for provincial reporting.

Current Plan

The current VRI Implementation consists of:
1.1 Management unit and sub-unit standards and procedures, and,
2.1 Consideration for the Integration of monitoring standards and procedures.

Each program is designed for specific inventory needs. The following sections outline each program and describe how they are currently being implemented.

1.1 MANAGEMENT UNIT OR SUB-UNIT STANDARDS AND PROCEDURES

The current approach for VRI Implementation is to develop management unit inventories to meet key business needs. VRI Management Unit Inventories include inventories conducted in a variety of management units (e.g. Districts) and in sub-units (portions of management units, e.g. problem forest types), to fulfil specific forest management or business needs.

VRI Planning

The stakeholder(s) (e.g. TFL holders and licensees) are responsible for the planning and implementation of these management unit inventories. Generally, the activities required for a Management Unit Inventory are defined in a VRI Strategic Implementation Plan (VSIP).

A) VRI Strategic Inventory Plan (VSIP)

A VSIP outlines VRI activities and products needed to address forest management business and inventory issues in a given management unit. Plan development is co-ordinated by licensees. The plan not only provides a summary of technical issues and solutions associated with implementing a VRI, but it may also be used to secure local funding support. For more information on the objectives of a VSIP, please refer to:

VSIP: http://srmwww.gov.bc.ca/tib/vri/vri/lifecycle/lc_plan_vsip/vsip_toc.htm

For an example of recently prepared VSIP please refer to:

Mackenzie VSIP: http://srmwww.gov.bc.ca/tib/vri/vri/reports&pub/vsip/mackenzie_vsip_2000.pdf

Although the existing plans may not be totally current to present day business needs, and may be difficult to implement if funding availability changes, they can provide valuable strategic information.

During the past several years, the TIB, MSRM has been developing VSIPs in consultation with local clients to fulfil specific forest management or business needs. Sampling error and sampling intensity were controlled for specific vegetation attributes (e.g., timber volume) to achieve specific inventory objectives. A variety of VSIPs were developed across several types of Implementation Units in the province such as TSAs, TFLs, and other areas (parks, private lands, and other public lands). Within (or across) these Implementation Units there may be Management Unit Inventories completed to address specific issues such as problem forest types, or other strata in a TSA (or groups of TSAs).

B) VRI Project Implementation Plan (VPIP)

The second phase of implementing either a photo-interpreted or ground sampling VRI inventory is the development of a Project Implementation Plan (VPIP). The VPIPs are working documents that detail the specific operational activities associated with implementing and documenting the inventory activities identified in the VSIP. A VPIP defines the inventory needs, the information needed to meet those needs, and the methods for collecting the information. It also defines the operational responsibilities and quality assurance protocols necessary to ensure a successful project. For more information on preparing a VPIP, please refer to:

Fort Nelson District VPIP:
http://srmwww.gov.bc.ca/tib/vri/vri/reports&pub/vpip/groundsample/ftnelson_vpip_2001.pdf

Guidelines: http://srmwww.gov.bc.ca/tib/vri/vri/standards/grnd%20sample/sampling_plan_procedure.pdf

VRI Standards

Resource Inventory Committee (RIC) Standards

Approved standards for inventory data collection are required for all levels of inventory in British Columbia. For the VRI ground or photo-interpreted inventory, data collected must be consistent with the Resources Information Standards Committee (RISC) standards. For more information about RISC approved VRI standards, please refer to:

RISC: http://srmwww.gov.bc.ca/risc/pubs/teveg/index.htm.

Changes to the VRI standards can be requested through the Vegetation Inventory Co-ordinator, care of the Terrestrial Information Branch or through the VRI Change Management website at:

VRI Change Management: http://srmwww.gov.bc.ca/tib/vri/vri/vri_change.htm.

Requests will be addressed through a Change Management Process carried out annually.

2.1 MONITORING INITIATIVES

Consideration for tracking change over time was not part of the original VRI design. With the recent interest in change detection for the assessment of sustainability, monitoring protocols are being developed to collect data that will be used to assess sustainability and other emerging issues. This is an evolving process and as new protocols are developed, they will be made available with appropriate documentation and field procedures. At present, only the provincial change monitoring protocol has been established as a RIC standard. Work on monitoring commenced in the mid-1990 and the on-going work and progress is documented at:

Monitoring: http://srmwww.gov.bc.ca/tib/reports/growthyield.htm

The development of larger, multi-agency monitoring needs will be assessed in 2002 through the development of a high-level strategy to direct and support the design and implementation of an integrated, province-wide, environmental framework in the context of allied inventory, assessment and reporting activities. A second phase will develop a provincial strategy and begin with the implementation through clearly defined projects in fiscal 2002-03 (R. Keith Jones & Associates, January 2002). Results from this work will have a major impact on the current design and implementation of the VRI and other resource inventories.

2.1.1 Change Monitoring

Change monitoring is the independent check on the projected change or growth in a management unit. Related to this is change inventory which is the process of observing changes and trends over time in the level of the forest resource and change in the land cover classification between two or more time points. The report, Statistical Analysis for Monitoring Estimates of Change at the Management Unit Level by J.S. Thrower and Associates, March 31, 2000 can be found at:

Change Monitoring: http://srmwww.gov.bc.ca/tib/reports/growthyield.htm

Change monitoring can be implemented at any level of spatial resolution, however, current MSRM efforts are directed at the provincial level (see section below on Provincial Change Monitoring Inventory (PCMI) Program.

2.1.2 Growth and Yield Monitoring

Growth and Yield Monitoring is a specific application of change monitoring information. It is the process of comparing estimated growth and yield data with statistically sampled ground sample data. More simply stated, it is a statistical check on an estimate that has usually been derived from a model. A number of proponent initiated management unit level monitoring pilots are currently underway. Sampling is most often directed at selected stands in second-growth forests. A stripped-down version of the PCMI Program plot has been adapted for this work. During the fall of 2002, TIB will establish minimum standards for these pilots to ensure the data meet provincial corporate needs. Although these plots are intended to check growth trends over time, they will also provide a change monitoring function.

2.1.3 Provincial Change Monitoring Inventory (PCMI) Program/National Forest Inventory

In order to provide timely and accurate "provincial" inventory information, TIB has developed ground sampling and photo-estimation procedures linked directly to the National Forest Inventory (NFI) initiative developed in co-operation with the Canadian Forestry Service (CFS). Information about this initiative is available at:

CFS: http://www.pfc.cfs.nrcan.gc.ca/monitoring/inventory/canfi/cnfi%5Fe.html

The PCMI Program is the ground sampling component of British Columbia's contribution to the NFI. The Canadian Council of Forest Ministers (CCFM) obliges the provinces to participate in a new national forest inventory that would provide data of consistent standards for national level reporting. These data are known as "indicators" and respond to over 40 criteria established by the CCFM and the Montreal Process. British Columbia has responded by establishing a network of 2,400 2km x 2km photo estimation plots on a 20 km grid. Information for these plots is "drilled" from existing forest inventory Geographic Information System (GIS) files. Within a subset of these samples (314 fixed-area 0.04 ha) ground samples are being established. The plots will be remeasured in panels every five years. The PCMI Program is a stand-alone program; no other plots from other monitoring initiatives are to be included. TIB intends to drive provincial-level reporting from the two data sources.

Field procedures are available at:

RISC NFI standards: http://srmwww.gov.bc.ca/risc/pubs/teveg/index.htm.

For more information on the National Forest Inventory refer to:

NFI: http://www.pfc.cfs.nrcan.gc.ca/monitoring/inventory/canfi/cnfi%5Fe.html.

The MSRM TIB, along with the CFS, is responsible for the implementation of the NFI. Data from the NFI will provide information for provincial reporting of vegetation resources status and change. The NFI

standards and procedures are similar to the Provincial Change Monitoring Inventory Standards and Procedures. They are currently being field tested. For more information, please contact the TIB MSRM or refer to:

VRI Standards and Procedures: http://srmwww.gov.bc.ca/tib/vri/vri/vri_standards.htm

2.1.4 Integration and Implementation of Management Unit Level Monitoring within the VRI

Inventory monitoring projects can be implemented on any spatial area but most commonly they have been on larger units such as TSAs, TFLs or Forest districts. TIB is currently assessing changes to VRI ground sampling procedures to ensure that adequate monitoring information to assess sustainability will be collected. As is the case for regular inventory work, projects are driven by the needs of the stakeholder(s). The stakeholders (e.g. TFL holders, licensees or the MOF Regions/Districts) will be responsible for the planning and implementation of the monitoring component. Until provincial standards are in place for management units (scheduled for fall 2002), agencies wishing to develop monitoring projects should contact this branch. For more information, please contact the TIB MSRM or refer to:

VRI Standards and Procedures: http://srmwww.gov.bc.ca/tib/vri/vri/vri_standards.htm

Conclusion

The implementation models presented above, are supported by the agencies responsible for implementation and funding within British Columbia (e.g. MoF, MSRM, Forest Investment Vote(FIV)). The current Implementation Plan has changed in response to client needs and funding realities. The information supplied is current as of March 2002 and is subject to change.

Further Information

For more information regarding the VRI standards and best practice requirements for Forest Investment Account funding eligibility please see the following web site:

VRI: http://srmwww.gov.bc.ca/tib/vri/index.htm

FIA: http://www.for.gov.bc.ca/hcp/fia/

References:

J.S. Thrower and Associates, March 31, 2000, Graphical and Statistical Analysis for Monitoring Estimates of Change at the Management Unit Level, Prepared for J. Vivian, Resources Inventory Branch, Ministry of Forests.